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## N°. XIX.

*An Essay tending to improve intelligible Signals, and to discover an Universal Language. From an anonymous Correspondent in France, (probably the Inventor of the Telegraph) translated from the French.*

POSSUNT QUIA POSSE VIDENTUR, Virgil.

Read June  
20, 1788.

**A**LL the delights, and conveniences of life originate in the mutual aids which men render to each other ; but these aids require, or in a great measure depend on the mutual communication of their ideas. Every thing therefore which may contribute to extend and facilitate such communication, will doubtless be considered as useful, and meet with a favourable reception from the society ; and this is the object of the present essay.

*A Natural Square.*

11	21	31	41	51	61	71
12	22	32	42	52	62	72
13	23	33	43	53	63	73
14	24	34	44	54	64	74
15	25	35	45	55	65	75
16	26	36	46	56	66	76
17	27	37	47	57	67	77

The

The foregoing square forms the basis of the following table, at the foot of which will be found the method of using it. This little essay is only intended to illustrate it by some examples.

Suppose I would transmit, by signals, the following phrase, to my correspondent.

*Il ne devoit pas y avoir pour les lettres d'autre poste que l'aerienne.*

1. I look at the table, which is divided into two parts, and search for the syllables which in both parts are placed in alphabetical order.

2. I find *il* in the 5th column. I begin then by indicating the fifth column, and place the figure 5 by itself above the place for the units which are to follow. I then place under it the figures, corresponding to the syllable *il* in the table  $\frac{75}{75}$ , making  $\frac{5}{75}$  *il*.

3. In the same manner I find the syllable *ne* in the 3d column against 16,  $\frac{3}{16}$  *n*, and so on till I get through the whole phrase. See A in the examples at the end of this essay.

4. I keep a note of my letter, either to correct any error that might escape attention, or to make the table the more familiar, and to enable me to write currently in figures without looking at it.

5. I only send my numbers to the aerial post as they are placed in column B in the examples.

6. The director of the post will only have to translate these numbers into longs (—), and briefs ( ∪ ), as in the column C, and to deliver this translation to the operator.

7. The operator need only know how to express, and distinguish the longs and briefs by his instrument and to wait the answer to one signal, before he makes a second.—So much for the outset.

At

At the next station the operator must exactly answer every signal by repeating it, in case there are more stations than one; If the next station be the last, one signal will do, after having written the longs (—), and briefs ( ∪ ), as in column C.

2. The director of the corresponding post will translate these signs back again into numbers, and send them to their address in the form of column B.

3. The correspondent will consult his table and join the syllables to the numbers received, supplying those that by agreement may be suppressed or abridged, see column A.

I cannot avoid observing that in spite of my endeavours the number of signals (61) exceeds the number of letters in the phrase (57), by 4, but it will be seen that I have left a number of figures without corresponding letters, which might have assisted me; and in this phrase I have not been favoured by the chance of finding many syllables in the same column, which would have saved the repetition of column numbers. Besides this, I presume the constraint I have laid upon myself, by using only four strokes of one instrument for facilitating and insuring the success of the enterprize, will merit some indulgence.

Be this as it may, I imagine that in the course of practice the number of signals may be diminished, either by reducing the number of columns in the table, or by placing several syllables to the same figure, the sense of which may be determined by the choice of them. Without having recourse to all these expedients, let us try another example to obtain the same end.

*Quelle plus étroite obligation que celle de nous secourir mutuellement ?*

I begin by suppressing all letters, and even words that may be readily supplied, and reduce the phrase to this—

*Qué pu etoi obigaïsen que nou scouri.* See column D in the examples.

On counting the number of the letters and of the signals, it will be seen that the proportion is as 61 to 33 in favour of the signals. The frequent changing of the column number might be avoided by reversing some syllables, as *un noto de vin* for *un tono de vin*.

To give an idea of the degree of perfection which may, by practice, be given to our table; let any one number (suppose 76 of the 7th column) be fixed upon to designate "*the sum of*", "*the number of*", "*the burden of*", &c. and by agreeing that after these, all succeeding figures of that column, (which would otherwise express syllables) shall only express numbers until a new column signal be made, it would be easy to designate divers numbers from 1 to 400,000 by making the 9 first numbers units, and the 9 following decimals.

Example. *Les ennemis m'ont pris un navire de 400 tonneaux et de 35 hommes d'équipage, dans lequel j'avois cent mille ecus en especes.* See column E of the examples.

Further, if a book were made, in which, the longest words in our language, every member of the phrases most in use in different professions, and even whole phrases for cases that might be foreseen, were to be numerically arranged from 1 to 400,000, by referring to any number, as in the last example, the whole phrase attached to such number might be communicated first using one number, (75 for instance), to signify "*look at your book of numbers.*"

Ex. Suppose I have occasion for this phrase from the book No. 2. *Je vous enverrai ce que vous me demandez par la messagerie le—*

Note. The first number following should indicate the day of the month, the second, the month itself, the third, the year. Then finding the phrase in the book at No. 2. I fill up the blanks as in column F of the examples. It

will be there seen that the first 31 numbers of the table may signify the days of the month, the first 12 the 12 months of the year, and supposing the first number to indicate the present year, the others may follow in course, either past or future, as may be, indicated by another figure. It appears therefore that our table may be made to indicate many different things without the least confusion.

If it be desired to use any other article of the book, 75 may be added to the numbers used in the preceding example, which would refer to another column, if immediately afterwards you would express yourself in detached syllables.

Another Example. Suppose I have occasion to use this phrase from the book No. 4. *Je partirai pour vous aller voir.* N. B. The first following number will indicate the day of the week, the next the hour, &c. which phrase I shall find with the note annexed at No. 4. in that book. I may then write as in example G.

It may be also observed that the 7 first numbers of the table will indicate the 7 days of the week, the first 24 the hours from midnight to midnight. For instance to indicate 2. P. M. I would use No. 27. which would designate the 14th hour.

This mode of writing may appear tedious, but besides the consideration that practice facilitates every thing, your correspondent may have read half of your letter before you have had time to finish it, in case you write on detached leaves, and transmit as fast as they are filled. Your correspondent may even read your letter at an earlier moment than it is begun; for if the signals be sent from east to west their communication may outstrip the velocity of the diurnal rotation of the globe.

It is needless to add that by changing the order of the syllables, the communication may be kept secret from all, except the person who has notice of such change.

*A Magic*

*A Magic Square.*

74	12	13	17	73	72	47
21	64	52	26	32	46	67
31	23	54	33	45	65	57
77	66	35	44	53	22	11
37	25	43	55	34	63	51
27	42	36	62	56	24	61
41	76	75	71	15	16	14

It now only remains to discover what can make an impression on our senses, at the greatest distance, and at the least expence. I would here remark that great advantage might be made of the observations of Dr. Franklin, relative to the rapid transmission of sound under water.

Archimedes said, Give me a fulcrum without the globe and I will raise a power that shall remove it from its orbit ; and I say—Place a correspondent in Saturn, with the power of producing and suppressing at will, any one appearance, and I will obtain an exact account of what passes in that planet.

Before I quit this subject of signals, it will be seen that they contain the very essence of an universal language, so long desired by all commercial nations. It may however be observed that it is not so much a new language that is sought after, as the means of corresponding with every one in his own ; and for this purpose numbers appear to me, the most proper *medium*. It need not then be contended which language is the most universal, nor need there be any college for the study of languages. One plant named differently by fifty thousand different na-

tions, may be found under the same number in the Dictionary of each nation. This language would be the clearest and least equivocal of all others, and should mankind be able universally to understand each other, they would doubtless be disposed to promote each other's happiness.

I believe all Europe makes use of the same figures, and at any rate they would be sooner learnt than a language.

I will extend these ideas if they are found to be new and useful, which, according to Mr. Voltaire, is the only excuse an author can have for making a book.

N. B. This little Essay made this year 1786, is only an extract from a more ample work begun in 1781.

*Examples referred to in the foregoing Essay.*

A	B	C	D	E	A	B	C	D	E
5.	5.	— u u u	1.	6.	4.	u u —	43. ri	3.	
75. il	75.	u u u u	32. qué	22. les	26. t	—		14. no	
		— u u u				u u —			
3.	3.	— u u —	3.	1.	1.	—		7.	
16. n	16.	—	35. pu	66. enne	54. do	54. — u u		76.	
		u u —				u u		25. 30	
1.	1.	—	5.	2.	4.	4. — u u —		15. 5	
56. d	56.	— u u u	47. etoi	73. mi	26. t	26. —		6.	
		u u —				u u u		45. ome	
4.	4.	— u u —	3.	6.	3.	3. — u u —		3.	
46. y	46.	u u u —	21. o	33. mon.	34. po	34. —		26. ou	
		u u —				u u			
1.	1.	—	1.	3.	4.	4. — u u —		2.	
15. ai	15.	—	23. bi	33. pi	16. ft	16. —		56. j	
		— u u				u u —			
3.	3.	— u u —	2.	4.	1.	1. —		4.	
31. pa	31.	—	21. ga	34. un	36. ke	36. —		73. avoi	
		—				u u —			
2.	2.	— u u u	6.	3.	2.	2. — u u u		7.	
41. i	41.	u u —	75. fion	11. na	61. la	61. — u u		76.	
		—				—		74, 100, 000	
4.	4.	u u —	1.	4.	1.	1. —		1.	
73. avoi	73.	u u u	36. ke	43. vi	61. é	61. u u —		61. é	
		—				—		35. cu	
6.	6.	— u u —	6.	7.	3.	3. — u u —		17. an	
54. pou	54.	— u u u	43. nou	76.	43. ri	43. —		67. es	
		u u —		41. 400		—		6.	
22. les	22.	—	7.	4.	1.	1. —		52. pés	
		—	14. fcon	24. to	66. enne	66. u u —			
22. lés	22.	—	3.			u u —			
		—				—			



Example. F

- 7. See column 7 in the table.
- 75. Look at your book of numbers.
- 12. No. 2. of the book, " I shall fend you," &c.
- 12. The 2d.
- 12. February.
- 12. Next year.

Ex. G

- 7. Column 7.
- 75. Look at your book of numbers.
- 14. No. 4, "*I shall set off*," &c.
- 14. Next Thursday.
- 14. At 4 o'clock in the morning.

This universal language would save more than one half of the present writing, it would therefore have the advantage of short hand.

As there are three sorts of language. 1st. That of analogy. 2d. That of transposition, and a third of a mixed nature, it appears to me proper to begin by making a dictionary of 2 or 3 languages of each kind, and as these three sorts differ from each other, if by adapting one to the other they should become intelligible, it might not be difficult to bring all languages into the same plan.

I will not now enlarge on this subject, because it would be useless, if my first and fundamental idea should not be adopted.

*Table of Correspondence by the Sight, the Hearing or the Feeling, by any Instrument capable of making an Impression on either of the Senses.*

1		2		3		4	
11. a	51. da	11. fa	51. ja	11. na	51. fa	11. sta	51. xa
2. ab	2. dé	2. fé	2. jé	2. né	2. fé	2. sté	2. xé
3. ace	3. di	3. fi	3. ji	3. ni	3. fi	3. sti	3. xi
4. ad	4. do	4. fo	4. jo	4. no	4. so	4. sto	4. xo
5. ai	5. du	5. fu	5. ju	5. nu	5. fu	5. stu	5. xu
6. aife	6. d	6. f	6. j	6. n	6. f	6. st	6. x
7. an	7.	7.	7.	7.	7.	7.	7.
21. ba	61. e	21. ga	61. la	21. o	61. fca	21. ta	61. za
2. bé	2. ec	2. gué	2. lé	2. ob	2. squé	2. té	2. zé
3. bi	3. eil	3. gui	3. li	3. oi	3. squi	3. ti	3. zi
4. bo	4. el	4. go	4. lo	4. oin	4. sco	4. to	4. zo
5. bu	5. emme	5. gu	5. lu	5. on	5. scu	5. tu	5. zu
6. b	6. enne	6. gue	6. l	6. ou	6. sq.	6. t	6. z
7.	7. es	7.	7.	7. oui	7.	7.	7.
31. ca	71. ette	31. gna	71. ma	31. pa	71. spa	31. u	71. ayant
2. qué	2. eu	2. gné	2. mé	2. pé	2. spé	2. ub	2. ayons
3. qui	3. cuil	3. gni	3. mi	3. pi	3. spi	3. ui	3. avoi
4. co	4. eur	4. gno	4. mo	4. po	4. spo	4. un	4.
5. cu	5. ex	5. gnu	5. mu	5. pu	5. spu	5. une	5.
6. ckq	6. exem	6. gn	6. m	6. p	6. sp	6. up	6.
7.	77.	7.	77.	7.	77.	7. us	77.
41. cha		41. i		41. ra		41. va	
2. ché		2. ian		2. ré		2. vé	
3. chi		3. ié		3. ri		3. vi	
4. cho		4. ien		4. ro		4. vo	
5. chu		5. ieu		5. ri		5. vu	
6. ch		6. in		6. r		6. v	
47.		47. ion		47.		47.	
5		6		7		9	
11. ban	51. fan	11. jan	51. pan	11. fean	51. van	11. fan	51. van
2. bés	2. fés	2. jés	2. pés	2. squés.	2. vés	2. fés	2. vés
3. bon	3. fon	3. jon	3. pon	3. scon	3. von	3. fcon	3. von
4. bou	4. fou	4. jou	4. pou	4. fcou	4. vou	4. fcou	4. vou
5.	5.	5.	5.	5.	5.	5.	5.
6.	6.	6.	6.	6.	6.	6.	6.
7.	7.	7.	7.	7.	7.	7.	7.
21. can	61. gan	21. lan	61. ran	21. span	61. ran	21. span	61. ran
2. qués	2. gués	2. lés	2. rés	2. spés	2.	2. spés	2.
3. con	3. gon	3. lon	3. ron	3. spon	3.	3. spon	3.
4. cou	4. gou	4. lou	4. rou	4. fpou	4.	4. fpou	4.
5. queu	5.	5.	5.	5.	5.	5.	5.
6. ction	6.	6.	6.	6.	6.	6.	6.
7. ceuil	7.	7.	7.	7.	7.	7.	7.
31. chan	71. gnan	31. man	71. fan	31. stan	71. fan	31. stan	71. fan
2. chés	2. gnés	2. més	2. lés	2. stés	2.	2. stés	2.
3. chon	3. gnon	3. mon	3. fon	3. ston	3.	3. ston	3.
4. chou	4. gnou	4. mou	4. fou	4. stou	4.	4. stou	4.
5.	5. ill	5. Mr.	5. sion	5.	5.	5.	5.
6.	6. ique	6. M. de	6. fin	6.	6.	6.	6.
7.	77.	7.	77.	7.	77.	7.	77.
41. dan		41. nan		41. tan		41. tan	
2. dés		2. nés		2. tés		2. tés	
3. don		3. non		3. ton		3. ton	
4. dou		4. nou		4. tou		4. tou	
5. etant		5. ome		5.		5.	
6. été		6. ote		6.		6.	
47. etoi		47.		47.		47.	

*Notes.*

1. Orthography is here out of the question, it is sufficient to be understood. The reader will therefore please to supply the letter *y* instead of *i*, (the *b* is understood) the *e* mute also as in *fe, me, ne*, which are marked *f, m, n*, all double letters and those that do not sound, also the *l* and the *r*, at the end of syllables as *eigale armée* and also when one of these two letters follow a consonant as *vraisemblablement*; the sense of the phrase will sufficiently indicate the letters suppressed, which however, might be marked by signal if necessary.

2. To correspond by hearing, some sonorous instrument should be used, the figures may be expressed by sounds or strokes in slow or in quick succession continued or interrupted.

- 1, by one long —
- 2, by two longs — —
- 3, by three longs — — —
- 4, by two briefs ∪ ∪
- 5, by one long and two briefs — ∪ ∪
- 6, by two briefs and one long ∪ ∪ —
- 7, by three briefs. ∪ ∪ ∪

The figures should be taken two and two to form the numbers which indicate the syllables, except the last 77, which indicates the word *column* in the table, and the number of the column will be indicated by the very next figure expressed. Example: I hear three precipitate sounds, I then write 7 these are followed by three others, I then recognize 77 or column, then instead of writing another 7 I place a point over the first 7 to signify column, and I listen for the next signal, if I hear three more precipitate sounds, I add 7 to the pointed 7, which I understand to be column 7, thus 77. Then I must look into that column for the syllables of all succeeding signals. This  
general

general way of signalising the columns, will do for the sight; but there is another more expeditious way for the hearing, which will not deprive the columns of the No. 77.

Example. Four strokes or sounds may be combined in seven different ways.

First column — — — —

Second ditto. — — ∪ ∪

Third do. — ∪ ∪ —

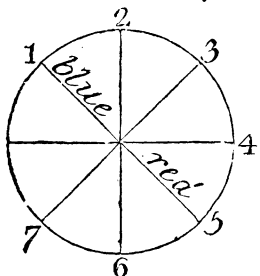
Fourth do. ∪ ∪ — —

Fifth do. — ∪ ∪ ∪

Sixth do. ∪ ∪ ∪ —

Seventh do. ∪ ∪ ∪ ∪

3. To correspond by sight, a flag of two colours will answer in the day time, which may be fixed to a turning circle, the figures may be expressed by seven different positions and the eighth may serve to signalise a repetition of the last figure. At night a light may be made to appear and disappear at unequal intervals to designate the longs — or briefs. ∪



4. It is evident that, with the same table, a like communication of intelligence might be conveyed by the touch, merely by taking hold of the hands; the table being previously adapted to this purpose, consequently a deaf, a blind or a dumb person might converse with any one who can read, provided he learns the table by heart.

5. The two particular columns which are included in the 7th column are to indicate numbers. Any number of this column may serve to indicate that all that follow are to be considered as quantities instead of syllables, until by a new signal you are referred to some other column; for instance let 76 be the number.

Example.	76	
	76	300,000
	52	4000
	26	40
		<hr/>
		304040
		<hr/>

N<sup>o</sup>. XX.

*Memoir on the Subject of a new Plant, growing in Pennsylvania, particularly in the Vicinity of Philadelphia, by Mr. BEAUVOIS.*

Read August  
21, 1795.

**A**MONG the many observations I have hitherto made on the natural productions of this country, there is one which appears worthy of being presented to you. This I do after having often repeated my observations on the plant both in the fields and in my own chamber, where I have preserved it these two months.

The first time I saw this plant, was near Wilmington in a ditch continually wet, since which I have found it between Reading and Pottsgrove, and latterly near this city, where it is very common, growing as it were under our eyes; we trample it under our feet; the cattle feed greedily on it, and yet it is unknown among botanists, none of whom having published any description of it. Whether it possesses any medicinal virtues or not I cannot say. I have many times tasted it, and always found it insipid.

Although the silence of botanists on so common a plant, authorises me to present it to you as a discovery of my own, yet I shall not attach so high a value to the

Z

pretended